

## DEFINITIONS OF TERMS USED IN CASE CLASSIFICATION

**Confirmed Case:** A case that is classified as confirmed for reporting purposes.

**Probable Case:** A case that is classified as probable for reporting purposes.

**Laboratory Confirmed Case:** A case that is confirmed by one or more of the laboratory methods accepted for laboratory confirmation for reporting purposes.

**Clinically Compatible Case:** A clinical syndrome generally compatible with the disease, but no specific clinical criteria need to be met unless they are noted in the case classification.

**Supportive Laboratory Results:** Specified laboratory results consistent with the diagnosis but not meeting the criteria for laboratory confirmation.

**Epidemiologically Linked Case:** A case in which the patient has or has had contact with one or more persons who have or have had the disease, and transmission of the agent by the usual modes of transmission is plausible. A case may be considered epidemiologically linked to a laboratory confirmed case if at least one case in the chain of transmission is laboratory confirmed.

**Meets the Clinical Case Definition:** Meets precisely the clinical case definition. Although in clinical practice the diagnosis may be made with the use of other criteria, for reporting purposes the stated criteria must be met.

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## **Diphtheria**

### **What is diphtheria?**

Diphtheria is an acute bacterial disease that usually affects the tonsils, throat, nose, or skin. The bacteria produce a very potent toxin that can circulate throughout the body and affect other organs.

### **Who gets diphtheria?**

Diphtheria is most common in low socioeconomic groups where people live in crowded conditions. Non-immunized children under fifteen years of age are more likely to contract diphtheria. The disease is often found among adults whose immunizations were neglected and is most severe in non-immunized or inadequately immunized individuals.

### **How is diphtheria spread?**

Diphtheria is transmitted to others through close contact with discharge from an infected person's nose, throat, eyes, and lesions.

### **What are the symptoms of diphtheria?**

There are two types of diphtheria. One type involves the nose and throat, and the other involves the skin. Symptoms include sore throat, low-grade fever, and enlarged lymph nodes located in the neck. Skin lesions may be painful, swollen, and reddened.

### **How soon after infection do the symptoms appear?**

The symptoms usually appear two to four days after infection, with a range of one to six days.

### **When and for how long is a person able to spread diphtheria?**

Untreated people who are infected with the diphtheria germ can be contagious for up to two weeks, but seldom more than four days. If treated with appropriate antibiotics, the contagious period can be limited to less than four days.

### **Does past infection with diphtheria make a person immune?**

Recovery from diphtheria is not always followed by lasting immunity.

### **What is the treatment for diphtheria?**

Certain antibiotics, such as penicillin and erythromycin, can be prescribed for the treatment of diphtheria. An antitoxin obtained from horses is also administered.

### **What complications have been associated with diphtheria?**

If diphtheria goes untreated, serious complications, such as paralysis, heart failure, and blood disorders, may occur. Death occurs in approximately five to ten percent of all cases.

### **Is there a vaccine for diphtheria?**

Diphtheria toxoid is usually combined with tetanus toxoid and acellular pertussis vaccine to form a triple vaccine known as DTaP. This vaccine should be given at two, four, six, and fifteen to eighteen months of age, and between four and six years of age. A combination of tetanus toxoid and diphtheria toxoid (Td) should be given every ten years to maintain immunity.

### **What can be done to prevent the spread of diphtheria?**

The single most effective control measure is maintaining the highest possible level of immunization in the community. Other methods of control include prompt treatment of cases and a community surveillance program.

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**Haemophilus Influenzae Type b**  
**(Hib, Haemophilus b)**

**What is Haemophilus influenzae type b (Hib)?**

Until recently, Hib was one of the most important causes of bacterial infection in young children. Hib may cause a variety of diseases, such as meningitis (inflammation of the coverings of the spinal column and brain), blood stream infections, pneumonia, arthritis, and infection of other parts of the body.

**Who gets Hib disease?**

Hib disease is most common in children three months to three years of age.

**How is Hib disease spread?**

Hib disease may be transmitted through contact with mucus or droplets from the nose and throat of infected individuals.

**What are the symptoms of Hib disease?**

Symptoms may include fever, lethargy, vomiting, and a stiff neck. Other symptoms depend on the part of the body affected.

**How soon after infection do the symptoms appear?**

The incubation period for Hib disease is usually less than ten days.

**When and for how long is a person able to spread Hib disease?**

The contagious period varies and, unless treated, may persist for as long as the organism is present in the nose and throat, even after symptoms have disappeared.

**Does past infection with Hib disease make a person immune?**

No, children who have had Hib disease are at risk of recurrence.

**What is the treatment for Hib disease?**

Antibiotics, such as ampicillin or chloramphenicol, are generally used to treat serious infections. Rifampin is used to treat people who may be carrying the bacterium.

**What are the possible complications associated with Hib disease?**

Hib disease manifests itself in a variety of ways, most commonly meningitis. When Hib meningitis occurs, a certain proportion of those who recover may suffer long lasting neurologic problems. In some instances, the disease may be fatal.

**What can be done to prevent the spread of Hib disease?**

There are currently several Hib conjugate vaccines licensed by the U.S. Food and Drug Administration. Immunization authorities recommend that all children be immunized with an approved Hib vaccine beginning at two months of age or as soon as possible thereafter. Recommendations for scheduling of subsequent doses vary depending on the manufacturer. Therefore, it is important to consult your physician or local health department.

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## **Hepatitis A**

### **What is hepatitis A?**

Hepatitis A is a serious liver disease caused by the hepatitis A virus (HAV).

### **Who gets hepatitis A?**

Most infections result from contact with a household member or sexual partner who has hepatitis A. Sometimes infection results from eating food or drink which is contaminated with the hepatitis A virus.

### **How is hepatitis A spread?**

Hepatitis A is transmitted by the fecal/oral route. This means that you must get something in your mouth which is contaminated with stool from an infected person. The spread is usually by close personal contact and sometimes by eating food or drinking water containing the hepatitis A virus.

### **What are the symptoms of hepatitis A?**

Hepatitis A can cause a variety of symptoms ranging from mild “flu-like” illness to more serious problems, such as yellowing of the eyes (jaundice), severe stomach pains, and diarrhea.

### **How soon after infection do the symptoms appear?**

On average, symptoms appear one month after exposure.

### **When and for how long is a person able to spread hepatitis A?**

The contagious period lasts from two weeks before to one week after the jaundice starts.

### **Does past infection with hepatitis A make a person immune?**

Yes, immunity acquired after contracting the disease is usually permanent.

### **What is the treatment for hepatitis A?**

Rest and a balanced diet are usually all that is needed. There is no medication to treat hepatitis A.

### **What complications have been associated with hepatitis A?**

In some cases, hepatitis A causes death.

### **Is there a vaccine for hepatitis A?**

Yes, several hepatitis A vaccines are available. The type of vaccine, number of doses, and vaccination schedule vary according to age. Vaccination is recommended for travelers to countries where hepatitis A is a common infection, persons in this country who live in communities with high rates of infection, men who have sex with men, drug users, persons with occupational risk of infection, persons with chronic liver disease, and persons with clotting factor disorders.

### **What can be done to prevent hepatitis A?**

The single most important preventive measure is a high level of immunization in the community. Hand-washing with soap after toileting and diapering is an effective way to prevent the spread of hepatitis A. Immune globulin (IG) can help prevent infection and is recommended for household contacts and sexual contacts of a person infected with hepatitis A. It is also recommended for children in the same day care center as a person infected with hepatitis A. Infected children should stay home from school and day care for ten days following the onset of illness.

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**Hepatitis B**

**What is hepatitis B?**

Hepatitis B is a serious liver disease caused by the hepatitis B virus (HBV).

**Who gets hepatitis B?**

Most infections result from contact with the blood or body fluid of a household member or sexual partner who is infected with hepatitis B. Infection can occur during birth when an infected mother passes the virus to her baby.

**How is hepatitis B spread?**

The hepatitis B virus is spread by blood, sexual contact, and from an infected mother to her child during labor.

**What are the symptoms of hepatitis B?**

Hepatitis B can cause a variety of symptoms, including loss of appetite, feeling tired, pains in muscles, joints, or the stomach, diarrhea, vomiting, yellowing of the eyes (jaundice), skin rashes, dark urine, and light or gray stools.

**How soon after infection do the symptoms appear?**

Hepatitis B has an incubation period of 20-180 days.

**When and for how long is a person able to spread hepatitis B?**

Many hepatitis B infections progress to chronic or long lasting infection, especially in infants and children. Persons with chronic infection may not be aware that they are infected, yet are capable of infecting others.

**Does past infection with hepatitis B make a person immune?**

Yes, immunity acquired after contracting the disease is usually permanent.

**What is the treatment for hepatitis B?**

There is no specific treatment for hepatitis B infection. Rest, fluids, and a good diet are important.

**What complications have been associated with hepatitis B?**

Complications include liver cancer, cirrhosis, and death.

**Is there a vaccine for hepatitis B?**

Yes, vaccination is recommended for all newborns at birth and for people who are considered to be at high risk. These include healthcare workers, clients and staff of institutions for the developmentally disabled, hemodialysis patients, contacts of hepatitis B carriers, travelers to areas with high rates of hepatitis B, intravenous drug users, sexually active homosexual and bisexual men, and heterosexuals with multiple partners.

**What can be done to prevent hepatitis B?**

The single most important preventive measure is a high level of immunization in the community. Persons with hepatitis B infection should prevent their blood and body fluids from contacting other persons and should not donate blood. They should not share eating utensils, toothbrushes, or razors with household members.

## **Influenza** **(Flu)**

### **What is influenza?**

Influenza (flu) is a viral infection of the nose, throat, bronchial tubes, and lungs. There are two main types of virus, A and B. Each type includes many different strains which tend to change each year.

### **When does influenza occur?**

Influenza occurs most often in the winter months. Illnesses resembling influenza may occur in the summer months, but they are usually due to other viruses.

### **Who gets influenza?**

Anyone can get influenza, but it is most serious in the elderly, in people with chronic underlying illnesses (such as cancer, emphysema, or diabetes), or those with weak immune systems.

### **How is influenza spread?**

Influenza is highly contagious and is easily transmitted through contact with droplets from the nose and throat of an infected person during coughing and sneezing.

### **What are the symptoms of influenza?**

Typical influenza symptoms include headache, fever, chills, cough, and body aches. Intestinal symptoms are uncommon. Although most people are ill for only a few days, some people have a much more serious illness, such as pneumonia, and may need to be hospitalized. Thousands of people die each year in the United States from influenza or related complications.

### **How soon do the symptoms appear?**

The symptoms usually appear one to three days after infection.

### **How is influenza diagnosed?**

Usually a doctor will diagnose a case of influenza based on typical symptoms of fever, chills, headache, cough, and body aches. Specific lab tests to confirm influenza are costly and time consuming and are usually limited to outbreak or disease surveillance efforts.

### **When and for how long is a person able to spread influenza?**

The contagious period varies, but probably begins the day before symptoms appear and may extend for a week.

### **Does past infection with influenza make a person immune?**

Generally, no, the viruses that cause influenza frequently change, so people who have been infected or been given a flu shot in previous years may become infected with a new strain. Because of this, and because any immunity produced by the flu shot will probably decrease in the year after vaccination, people in high risk groups should be vaccinated every year. People should be vaccinated before the expected influenza is seen in the community (November-March in the United States).

### **What are high risk groups?**

The following groups are at increased risk for serious illness and complications with influenza and should receive vaccine: (1) all people sixty-five years of age and older; (2) adults and children with long-term heart or lung problems; (3) residents of nursing homes and other institutions housing patients of any age who have serious long-term health problems; and (4) people who have kidney disease, cystic fibrosis, diabetes, anemia, severe asthma, cancer, immunologic disorders, and other medical conditions for which they are under the close supervision of a doctor. Others who should receive influenza vaccine include household contacts of high risk people and healthcare workers who provide care to high risk patients.

### **What is the treatment for influenza?**

Rest and liquids are usually adequate treatment. A prescription drug called amantadine may prevent or reduce the severity of influenza type A, but is not effective against type B.

### **What can be done to control or prevent influenza?**

Routine immunization against influenza is the most important control measure. All individuals in high risk groups should be vaccinated every year. Influenza vaccines (flu shot) may be available through your personal physician or local health department. When influenza type A occurs, amantadine may be prescribed for certain individuals. Because new influenza viruses often appear, the effectiveness of the vaccine sometimes varies from one year to the next. Nevertheless, studies have shown that even in years when new strains emerge, people in high risk groups who obtain annual flu shots tend to have milder illness and are less likely to be hospitalized with complications due to influenza.

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**Measles**  
**(Rubeola, hard measles, red measles)**

**What is measles?**

Measles is an acute, highly contagious viral disease capable of producing epidemics. Measles is more common in winter and spring.

**Who gets measles?**

Although measles is usually considered a childhood disease, it can be contracted at any age. Generally preschool children, adolescents, young adults, and inadequately immunized individuals comprise the majority of measles cases in the United States.

**How is measles spread?**

Measles is spread by direct contact with nasal or throat secretions of infected people, or less frequently by airborne transmission. Measles is one of the most readily transmitted communicable diseases.

**What are the symptoms of measles?**

Measles symptoms generally appear in two stages. In the first stage, the individual may have a runny nose, cough, and a slight fever. The eyes may become reddened and sensitive to light, while the fever consistently rises each day. The second stage begins on the third to seventh day and consists of a temperature of 103-105°F and a red blotchy rash lasting four to seven days. The rash usually begins on the face and then spreads over the entire body. Koplik spots (little white spots) may also appear on the gums and inside the cheeks.

**How soon do the symptoms appear?**

Symptoms usually appear in ten to twelve days, although they may occur as early as eight or as late as thirteen days after exposure.

**When and for how long is a person able to spread measles?**

An individual is able to transmit measles from five days prior to five days after rash onset.

**Does past infection make a person immune?**

Yes, permanent immunity is acquired after contracting the disease.

**What is the treatment for measles?**

There is no specific treatment for measles.

**What are the complications associated with measles?**

Pneumonia occurs in up to six percent of reported cases and accounts for sixty percent of deaths attributed to measles. Encephalitis (inflammation of the brain) may also occur. Other complications include middle ear infection and convulsions. Measles is more severe in infants and adults.

**How can measles be prevented?**

Anyone born on or after January 1, 1957, who does not have a history of physician-diagnosed measles or serologic confirmation of measles immunity, should receive two doses of MMR vaccine for maximum protection. The first dose should be given at twelve to fifteen months of age. The second dose should be given at four to six years of age (school entry), at the same time as the DTaP and polio booster doses. MMR vaccine is recommended for all measles vaccine doses to provide increased protection against all three vaccine preventable diseases (measles, mumps, and rubella). Measles immunization is required of all children enrolled in schools and pre-kindergarten programs. Many college students have also been required to demonstrate immunity from measles.

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**Mumps**  
**(Infectious parotitis)**

**What is mumps?**

Mumps is an acute viral disease characterized by fever and swelling and tenderness of one or more of the salivary glands.

**Who gets mumps?**

Although older people may contract the disease, mumps usually occurs in children between the ages of five and fifteen years of age. Mumps occurs less regularly than other common childhood communicable diseases. The greatest risk of infection occurs among older children. Mumps is more common during winter and spring.

**How is mumps spread?**

Mumps is transmitted by direct contact with saliva and discharges from the nose and throat of infected individuals.

**What are the symptoms of mumps?**

Symptoms of mumps include fever and swelling and tenderness of one or more of the salivary glands, usually the parotid gland (located just below the front of the ear). Approximately one-third of infected people do not exhibit symptoms.

**How soon after infection do the symptoms appear?**

The incubation period is usually sixteen to eighteen days, although it may vary from fourteen to twenty-five days.

**When and for how long is a person able to spread mumps?**

Mumps is contagious seven days prior to and nine days after onset of symptoms. A person is most contagious forty-eight hours prior to the appearance of symptoms.

**Does past infection with mumps make a person immune?**

Yes, immunity acquired after contracting the disease is usually permanent.

**Is there a vaccine for mumps?**

Yes, mumps vaccine is given on or after a child's first birthday and is usually administered in combination with measles and rubella vaccine. The vaccine is highly effective, and one injection usually produces lifelong protection.

**What complications have been associated with mumps?**

Swelling of the testicles occurs in fifteen to twenty-five percent of infected males. Mumps can cause central nervous system disorders, such as encephalitis (inflammation of the brain) and meningitis (inflammation of the covering of the brain and spinal column). Other complications include arthritis, kidney involvement, inflammation of the thyroid gland and breasts, and deafness.

**What can be done to prevent the spread of mumps?**

The single most effective control measure is maintaining the highest possible level of immunization in the community. Children should not attend school during their infectious period.



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**Pertussis**  
**(Whooping cough)**

**What is pertussis?**

Pertussis, or whooping cough, is a highly contagious disease involving the respiratory tract. It is caused by a bacterium that is found in the mouth, nose, and throat of an infected person.

**Who gets pertussis?**

Pertussis can occur at any age. Although most of the reported cases occur in children under five years of age, fifty percent of these are in children under one year of age.

**How is pertussis spread?**

Pertussis is primarily spread by direct contact with discharges from the nose and throat of infected individuals. Frequently older siblings, who may be harboring the bacteria in their nose and throat, can bring the disease home and infect an infant in the household.

**What are the symptoms of pertussis?**

Pertussis begins as a mild upper respiratory infection. Initially, symptoms resemble those of a common cold, including sneezing, runny nose, low grade fever, and a mild cough. Within two weeks, the cough becomes more severe and is characterized by episodes of numerous rapid coughs followed by a crowing or high pitched whoop. A thick, clear mucus may be discharged. These episodes may recur for one to two months and are more frequent at night. Older people or partially immunized children generally have milder symptoms.

**How soon after infection do the symptoms appear?**

The incubation period is usually five to ten days, but may be as long as twenty-one days.

**When and for how long is a person able to spread pertussis?**

A person can transmit pertussis from seven days following exposure to three weeks after the onset of coughing episodes. The period of communicability is reduced to between five and seven days when antibiotic therapy is begun.

**Does past infection with pertussis make a person immune?**

One attack may result in prolonged immunity.

**What are the complications associated with pertussis?**

Complications of pertussis may include pneumonia, middle ear infection, loss of appetite, dehydration, seizures, encephalopathy (disorders of the brain), apneic episodes (brief cessation of breathing), and death.

**What is the vaccine for pertussis?**

The vaccine for pertussis is usually given in combination with diphtheria and tetanus. Immunization authorities recommend that DTaP (diphtheria, tetanus, and acellular pertussis) vaccine be given at two, four, six, and fifteen to eighteen months of age and between four and six years of age.

**What can be done to prevent the spread of pertussis?**

The single most effective control measure is maintaining the highest possible level of immunization in the community. Treatment of cases with certain antibiotics, such as erythromycin, can shorten the contagious period. People who have or may have pertussis should stay away from young children and infants until properly treated.

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**Pneumococcal Disease**

**What is pneumococcal disease?**

Pneumococcal disease is a severe bacterial infection caused by streptococcus pneumoniae, also called pneumococcus. It may cause pneumonia, meningitis, middle ear infection, sinus infection, or a blood stream infection (bacteremia).

**Who gets pneumococcal disease?**

Young children are much more likely than older children and adults to get pneumococcal disease. It also occurs in the elderly or in people with serious underlying medical conditions, such as sickle cell disease, HIV infection, chronic lung, heart, or kidney disease. Others at risk include alcoholics, diabetics, people with weakened immune systems, and those without a spleen.

**How is the disease transmitted?**

The bacteria is spread by respiratory droplets from the nose or mouth of a person who is infected with pneumococcal infection.

**When does pneumococcal disease occur?**

Infections occur most often during the winter and early spring and less frequently during the summer.

**How soon after exposure do the symptoms appear?**

The incubation period may vary, but it is generally one to three days.

**What are the symptoms of pneumococcal disease?**

Symptoms may include fever, chills, headache, cough, chest pain, disorientation, shortness of breath, otitis media, and occasionally a stiff neck.

**How is pneumococcal disease diagnosed?**

Doctors are able to diagnose pneumococcal disease based on the type of symptoms exhibited by the patient and specific laboratory cultures of sputum, blood, or spinal fluid.

**How is it treated?**

Prompt treatment with antibiotics is usually effective. However, penicillin resistant strains of pneumococcus have been reported that may require the use of other antibiotics.

**Is there a vaccine to prevent infection?**

Yes, the FDA recently licensed a new vaccine for the prevention of pneumococcal disease in children. This vaccine is indicated for use in infants and toddlers. Pneumococcal vaccine for the prevention of disease among children and adults who are two years of age and older has been in use since 1977. Patients in high risk categories should ask their healthcare provider or local health department about pneumococcal vaccine.

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**Poliomyelitis**

**What is polio?**

Polio is a viral disease which may affect the central nervous system. Since polio immunization has become widespread, cases of polio are very rare.

**Who gets polio?**

Polio is more common in infants and young children and occurs under conditions of poor hygiene. However, paralysis is more common and more severe when infection occurs in older individuals. In exceedingly rare cases, oral polio vaccine can cause paralytic polio in a person who receives the vaccine and in a person who is a close contact of a vaccine recipient (one in every 8.1 million doses and one in every five million doses respectively).

**How is polio spread?**

Polio is predominantly spread through the feces.

**What are the symptoms of polio?**

Infection ranges in severity from an unapparent infection to a paralytic disease which may result in death. Symptoms include fever, malaise, headache, nausea and vomiting, excruciating muscle pain, and stiffness in the neck and back.

**How soon after infection do the symptoms appear?**

The incubation period is usually six to twenty days for paralytic cases, with a range of three to thirty-five days.

**When and for how long is a person able to spread polio?**

Patients are most infectious from seven to ten days before and after the onset of symptoms. However, patients are potentially contagious as long as the virus is present in the throat and feces. The virus persists in the throat for approximately one week after the onset of illness and is excreted in the feces for several weeks or, occasionally, months.

**Does past infection with polio make a person immune?**

There are three types of polio virus. Lifelong immunity usually depends on which type of virus a person contracts. Second attacks are rare and result from infection with a polio virus of a different type than the first attack.

**What is the treatment for polio?**

There is presently no cure for polio. Treatment involves supportive care.

**What are the complications associated with polio?**

Complications include paralysis (most commonly of the legs). Paralysis of the muscles of respiration and swallowing can be fatal.

**Is there a vaccine for polio?**

Inactivated polio vaccine (EIPV) is available. The American Academy of Pediatrics and the Advisory Committee on Immunization Practices recommend that a primary series of inactivated polio vaccine consists of three doses for routine vaccination of children in the United States. A minimum interval of four weeks should separate all doses of the series.

**How can polio be prevented?**

Maintaining high levels of polio immunization in the community is the single most effective preventive measure.

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**Rubella**  
**(German measles)**

**What is rubella?**

Rubella is a viral disease characterized by slight fever, rash, and swollen glands. Most cases are mild.

**Who gets rubella?**

In unvaccinated populations, rubella is primarily a childhood disease. Where children are well immunized, adolescent and adult infections become more evident. Rubella occurs more frequently in winter and spring.

**How is rubella spread?**

Rubella is spread by direct contact with nasal or throat secretions of infected individuals.

**What are the symptoms of rubella?**

Rubella is a mild illness which may present few or no symptoms. Symptoms may include a rash, slight fever, joint aches, headache, discomfort, runny nose, and reddened eyes. The lymph nodes just behind the ears and at the back of the neck may swell, causing some soreness and/or pain. The rash, which may be itchy, first appears on the face and progresses from head to foot, lasting about three days. As many as half of all rubella cases occur without a rash.

**How soon do the symptoms appear?**

The incubation period for rubella is twelve to twenty-three days. In most cases, symptoms appear within sixteen to eighteen days.

**When and for how long is a person able to spread rubella?**

Rubella may be transmitted from seven days before to seven days after a rash onset.

**Does past infection with rubella make a person immune?**

Yes, immunity acquired after contracting the disease is usually permanent.

**What is the vaccine for rubella?**

Rubella vaccine is given on or after a child's first birthday and is usually given in combination with measles and mumps vaccine (MMR).

**What can be the effect of not being immunized against rubella?**

Rubella infection is dangerous because of its ability to damage an unborn baby. Infection of a pregnant woman may result in a miscarriage, stillbirth, or the birth of an infant with abnormalities which may include deafness, cataracts, heart defects, liver and spleen damage, and mental retardation. Congenital rubella syndrome (CRS) occurs among at least twenty-five percent of infants born to women who have had rubella during the first trimester of pregnancy.

**What can be done to prevent the spread of rubella?**

Maintaining high levels of rubella immunization in the community is critical to controlling the spread. Control of the spread of rubella is needed primarily to prevent birth defects caused by CRS. Therefore, women of childbearing age should have their immunity determined and receive rubella vaccine if needed. Infected children should not attend school during their infectious period.

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**Tetanus**  
**(Lockjaw)**

**What is tetanus?**

Tetanus, commonly called lockjaw, is a bacterial disease that affects the nervous system. The germ that causes tetanus forms a case around itself called a spore. These spores are very durable, hard to kill, and may be found in soil, street dust, or animal and human feces. Due to widespread immunization, tetanus is now a rare disease.

**Who gets tetanus?**

Tetanus occurs more often in older people and in agricultural workers where contact with animal manure is more likely and immunization is inadequate.

**How is tetanus spread?**

Tetanus usually is contracted through a wound, such as a puncture, cut, or animal bite, that becomes contaminated with the organism. The organism produces a poison that attacks the body. It is not transmitted from person to person.

**What are the symptoms of tetanus?**

A common first sign is muscular stiffness in the jaw (lockjaw), followed by neck stiffness, difficulty in swallowing, rigidity of abdominal muscles, spasms, sweating, and fever.

**How soon after infection do the symptoms appear?**

The average incubation period is ten days but may range from one day to several months. Most cases occur within fourteen days. Shorter incubation periods are associated with more heavily contaminated wounds.

**Does past infection with tetanus make a person immune?**

Recovery may not result in immunity. Second attacks can occur after reinfection, and immunization is indicated after recovery.

**What is the treatment for tetanus?**

Wounds should be thoroughly cleaned, and dead or devitalized tissue removed. Any individual with a wound who has not had a tetanus-diphtheria (Td) booster in the past ten years should receive a booster injection of vaccine on the day of injury. For severe wounds, a booster may be given if more than five years have elapsed since the last dose. Tetanus immune globulin (TIG), antitoxin, or antibiotics may be given if the patient has not been previously immunized with a series of at least three doses of tetanus vaccine.

**What complications have been associated with tetanus?**

Complications include spasm of the vocal cords and/or of the respiratory muscles, causing interference with breathing. Other complications include fractures of the spine or long bones, hypertension, abnormal heartbeats, coma, generalized infection, clotting in the blood vessels of the lung, pneumonia, and death.

**Is there a vaccine for tetanus?**

An effective vaccine has been available for many years. In combination with diphtheria and acellular pertussis vaccine (DTaP), tetanus vaccine is given at two, four, six, and fifteen to eighteen months of age, and between four and six years of age. Children who are seven years of age or older should receive the tetanus-diphtheria (Td) vaccine. A Td booster shot is recommended every ten years thereafter.

**What can be done to prevent tetanus?**

The single most important preventive measure is a high level of immunization in the community, although widespread use of vaccine wound treatment is also important.

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**Chickenpox**  
**(Varicella zoster)**

**What is chickenpox?**

Chickenpox is a highly communicable disease caused by the Varicella virus, a member of the herpes virus family. It is the most commonly reported childhood disease in Kansas.

**Who gets chickenpox?**

Almost everyone gets chickenpox. In metropolitan communities, about seventy-five percent of the population has had chickenpox by fifteen years of age, and at least ninety percent by young adulthood. In temperate climates, chickenpox occurs most frequently in winter and early spring.

**How is chickenpox spread?**

Chickenpox is transmitted to others by direct person-to-person contact by droplets or airborne spread of discharges from an infected person's nose and throat, or indirectly through articles freshly soiled by discharges from the infected person's lesions. The scabs themselves are not considered contagious.

**What are the symptoms of chickenpox?**

Initial symptoms include sudden onset of slight fever and feeling tired and weak. These are soon followed by an itchy blister-like rash. The blisters eventually dry, crust over, and form scabs. The blisters tend to be more common on covered than exposed parts of the body. They may appear on the scalp, armpits, trunk, and even on the eyelids and in the mouth. Mild or unapparent infections occasionally occur in children. The disease is usually more serious in adults than in children.

**How soon do the symptoms appear?**

Symptoms commonly appear thirteen to seventeen days after infection, with a range of eleven to twenty-one days.

**When and for how long is a person able to spread chickenpox?**

A person is able to transmit chickenpox from five days before onset of rash to not more than six days after the appearance of the first lesion. Contagion may be prolonged in people with altered immunity.

**Does past infection with chickenpox make a person immune?**

Chickenpox infection generally results in lifelong immunity. However, this infection may remain hidden and recur years later as Herpes zoster (shingles) in a proportion of older adults and sometimes in children.

**What is the treatment for chickenpox?**

In 1992, Acyclovir was approved by the U.S. Food and Drug Administration for treatment of chickenpox in healthy children. However, because chickenpox tends to be mild in healthy children, most physicians do not feel that it is necessary to prescribe Acyclovir.

**What are the complications associated with chickenpox?**

Reye's syndrome has been a potentially serious complication associated with clinical chickenpox. Newborn children (less than one month old), whose mothers are not immune, and patients with leukemia may suffer severe, prolonged, or fatal chickenpox. Immunodeficient patients and those on immunosuppressive drugs may have an increased risk of developing a severe form of shingles.

**Is there a vaccine for chickenpox?**

A vaccine to protect children against chickenpox was first licensed in March 1995. It has been recommended for persons twelve months of age and older. To protect high risk newborns and immunodeficient patients from exposure, a shot of varicella zoster immune globulin (VZIG) is effective in modifying or preventing disease if given within ninety-six hours after exposure to a case of chickenpox. Older children and adults who have previously had chickenpox do not need to be vaccinated. Contact your doctor or local health department for further information about the chickenpox vaccine.

**What can a person or community do to prevent the spread of chickenpox?**

The best method to prevent further spread of chickenpox is for people infected with the disease to remain home and avoid exposing others who are susceptible. If they develop symptoms, they should remain at home until one week after the skin eruption began or until the lesions become dry. Pay particular attention to avoiding unnecessary exposure of nonimmune newborns and immunodeficient patients.

## **Kansas Health and Environmental Laboratory**

Department of Health and Environment

Forbes Field, Building 740

Topeka, Kansas 66620-0001

### **Laboratory Main Numbers:**

Laboratory Director ..... (785) 296-1620

Laboratory Information and Reporting Office ..... (785) 296-1627

Laboratory Fax Number ..... (785) 296-1641

### **Health Laboratories:**

Neonatal Screening ..... (785) 296-1651

Diagnostic Microbiology ..... (785) 296-1636

Serology ..... (785) 296-1653

Virology ..... (785) 296-1645

## **POLICIES AND LIMITATIONS**

Specimens must be properly labeled with patient's name or other unique identifier, using waterproof ink to prevent smearing and washing off. Unidentified specimens will be considered unsatisfactory.

Each specimen must be accompanied by appropriate information. Specimen data forms are provided upon request. The information requested on these sheets is necessary for proper assessment and handling of each specimen. Any additional pertinent information which would facilitate rapid and definitive laboratory analysis should be included. Postal regulations require proper packing and labeling of some etiological agents transported by mail. Suitable specimen containers must be used. Several specimen kits are available upon request for some of the laboratory tests offered.

The Kansas Health and Environmental Laboratory, in collaboration with public health officials, reserves the right to decide whether or not to analyze specimens. Contact the director or appropriate senior scientist before collecting or sending an unusual number of specimens (epidemics or surveys) to establish that the specimens can be analyzed or that sufficient selective medium can be made available.

Laboratory reports will be released only to physicians or other authorized personnel. When it is necessary to call or inquire about test results, please ask for the Laboratory Information and Reporting Office. When urgency requires a telephone report as soon as analyses are completed, prominently indicate this request on the specimen form.

The authorized sender of the specimen will receive the report of the result as soon as possible. Selected laboratory results are furnished to KDHE departmental health programs for follow-up or for epidemiologic purposes.

If at all possible, send all specimens on Monday through Wednesday. In this way, the laboratories handling them can complete preliminary testing before the weekend or a holiday intercedes. Holding of specimens obtained late in the week, either frozen or refrigerated, until the following Monday or Tuesday will often improve the potential for isolation of the etiological agent, as compared to having a sample sit several days at the bus depot or post office due to a holiday schedule or because it missed the Saturday mail.

If you have any questions concerning storage of specimens, please contact the appropriate laboratory. For urgent specimens, also contact the laboratory indicated so that any special preparation to facilitate the specimen can be made prior to its arrival.

*Reference:* Hays, P., Craft, W., Flahart, R. (1996). Manual of Health Laboratory Tests. Kansas Health and Environmental Laboratory.